Portable Batch System Expands Its Customer Base

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The Portable Batch System (PBS) project was started at Ames Research Center to produce a modern resource-management and job-queuing system that was compliant with the formal standards and was flexible and extensible in order to meet the changing needs of computing within the Agency. Although the initial effort concentrated on traditional supercomputers, PBS quickly gained wide acceptance on parallel systems such as the IBM SP series and on clusters of workstations. By providing a common command interface and job-management system across the complete range of modern computers, together with a flexible site and determined scheduling policy, PBS has gained wide acceptance in academie, industry, and the military.

In 1997, the emphasis in the research and development of PBS centered on metacenter computing. Metacenter computing is the management of multiple systems scattered across geographical or administrative domains. Initial work centered on two parallel systems, one at Ames and the other at Langley. This work identified study areas involving peer job scheduling and data movement. The research continued with the creation of a local metacenter consisting of four Cray systems. Current efforts are based on a large number of the Silicon Graphics Inc. Origin systems that are multiple processor systems.

Interest in metacenter computing is also high in other areas. Two of the four Department of Defense Major Shared Resource Centers (MSRC) are exploring ways of sharing computing resources. Both the Aeronautics Research Center at Wright-Patterson Air Force Base in Ohio and the Army Corp of Engineers Waterways Experiment Station in Mississippi have selected PBS as a major component of this research area. With PBS as a common job-scheduling and resource-management tool, the two centers are working to provide resources to each other.

Partly because of the metacenter work, Ames was presented with a NASA Space Act Award. This award was presented for "creative development of a technological contribution, which has been determined to be of significant value in the advancement of the space and aeronautical activities of NASA."

A second developmental effort within PBS during 1997 centered on the area of parallel job task management. When a distributed parallel job runs on multiple computer systems, there are the issues of starting the separate tasks that make up a parallel job, monitoring and controlling the tasks, and accounting for resources used by the tasks. A team of Ames researchers, together with representatives from other national laboratories and several major companies, worked to define a standard for a portable interface implementation that provides the service required to start, control, and monitor tasks.

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